reside in the nucleated cells enclosed in its blastema. The author assents to the observations of most physiologists, in believing cartilage to be a strictly non-vascular tissue, and he is at some pains to point out its analogies with the epithelial structures, such as epidermis or horn. He considers articular cartilage to hold precisely the same relation to bone as the epidermis to the corion; the analogue of the latter being found in the very hard and peculiar layer of bone which lies immediately beneath the cartilage, between it and the cancelli. He observes, also, that the cancelli may be regarded as representing the subcutaneous cellular layer, having, like it, areolar spaces, which are occupied by a fatty substance, the marrow. The arrangement of the capillary vessels in the articulating ends of bones, is in terminal loops, which pass into projections of the osseous tissue immediately in contact with the hard articular layer alluded to, and which the author regards as analogous to the papillæ of the corion.

The structure of this thin layer which intervenes between the vessels and the cartilage, differs from that of true bone; it is harder and denser; the lacunæ are very regularly disposed, but the canaliculi which characterize the ordinary osseous tissue are absent. Its articular surface is irregular, and is closely fitted by corresponding irregularities of the cartilage. The other surface is equally closely adapted to the papillæ of the osseous tissue, inclosing the looped capillaries, as before stated.

The articular cartilage presents a variation in structure towards the free surface. The cells which, throughout two-thirds of its substance, have no definite arrangement, become flattened out, their long axis assuming the direction of the articular surface. This the author regards as a modification similar to that of epithelium, the flattening of the cells being the effect of the pressure to which they are subjected. It is this flattened layer of cells which has been regarded by writers as a prolongation of the capsular epithelium upon the cartilaginous surface.

The destruction of cartilage in disease commonly proceeds by an infiltration of fatty granules, first into the cells, and ultimately into the hyaline intercellular substance. Thus disorganized and softened, the cartilage is removed by a gradual process of attrition, which the author considers as different from ulceration. [We do not see any good grounds for this distinction. The attrition, ulceration, or molecular disintegration of articular cartilage has been carefully described and figured by Goodsir, (Anat. and Path. Observations, p. 17, and Pl. I. Fig. 13.)]

Along with the process of destruction proceeds the formation of a tissue, containing newly formed fibres and blood vessels, which arises whenever the cartilage is removed. These vessels are connected with, and spring from, those of the fibrous tissues adjoining the joint; they are also frequently connected with those of the subjacent bone; but, in order that this may be the case, it is necessary that the thin articular lamina of bone, as well as the cartilage, shall have been removed by attrition. It is only, therefore, when this layer has been entirely removed that complete *synostosis*, or vascular and organic union of the opposite ends of the bone, can take place through the medium of the newly-formed fibrous tissue and its vessels; and it is commonly observed that up to a late period in the process of anchylosis, portions of the articular layer remain, and prevent the bony union at the joints where they are present.—*Month. Journ.* Nov. from *Guy's Hospital Reports*, Oct. 1848.

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19. *On the Pathological Changes in Mucous Inflammations.* By Rud. Virchow.—All inflammations are to be considered as alterations of the nutritive process, by which the plasma of the blood is thrown out of the vessels in increased quantity. In inflammations of mucous membranes, their anatomical relations cause the exudation of this plasma upon a free surface. The plasma itself may be unchanged in constitution, or its fibrine may be increased in quantity. Differences in the constitution of the plasma determine differences in the result; and thus are established three leading forms of mucous inflammation:

1. *The Catarrhal Form.*—In this the quantity of the blood-plasma is increased, and thrown out on the free surface. The cells (of epithelium) are formed in greater quantity than normal; but they do not reach their normal development, being replaced constantly by an increased succession of new ones. The richer

the plasma, the more rapid is the self-development. In the so-called *chronic catarrh*, there are frequently found in the fluid cells quite perfectly developed, of the aspect of the ordinary epithelium. In acute cases the cells do not reach this stage of development; they do not take on the epithelial forms characteristic of the part, but are thrown off as round, more or less spherical, mostly single-nucleated cells (mucous corpuscles). In the very acute, particularly the blennorrhagic forms of inflammation, almost all the cells are found in the earliest stages of development, smaller, more delicate, and containing often three to five nuclei; in short, possessing all the characters of the ordinary pus cell. All these forms may be considered as different grades of the epithelium cell; or, if the name *epithelium* be dropped, as cells developed on the surface of a mucous membrane, and whose only difference is their different degree of development.

2. *The Croupous Form.*—In this the plasma is not only increased, but is also altered in constitution, containing a large amount of fibrine, and coagulating more or less completely. The coagulum lies free on the surface of the membrane. This form is most frequent in the respiratory mucous membrane. The false membrane is either softened, friable (as in tracheal croup), and contains many cells; or it is of a more firm and fibrinous character (as in bronchial croup and exudation into the air-vessels, or true pneumonia), and contains the products of rupture of the capillary vessels, red and colourless blood corpuscles. In pneumonia the stage of hepatization, where the air-cells are filled with firm coagulated exudation, is generally succeeded by that of purulent infiltration, in which cells in every grade of development are formed in great abundance. In the first stages these cells have various degrees of resemblance to pus or epithelium; in the stage of resolution of the pneumonia, we find the air-cells full of granular cells and masses, or a finely granular emulsion, which are to be considered as the retrograde steps of the newly formed cells.

3. *The Diphtheritic Form.*—In this the exudation consists of nearly dry coagulated amorphous fibrine, and is infiltrated into the tissues composing the superficial layer of the mucous membrane, or rather of the submucous cellular tissue; for when it projects from the free surface, it is generally covered by the epithelial layer. Where organization proceeds in this kind of exudation, it is generally very imperfect; more commonly it is entirely absent, and a superficial slough is formed. Hence this form has been rightly considered as allied to a gangrenous form of inflammation; it is, in truth, closely allied to hospital gangrene.—*Archiv. für Pathologische Anatomie*, &c. Band. I. Heft 2.

[We shall take another opportunity of adverting to these opinions, as well as to other views enunciated in this able journal. In the meantime, we may state that we agree in many of the author's conclusions, although differing from him in some points; as, for instance, in regard to the constitution of the blood plasma, which we believe to be *least* altered where the fibrine is in greatest quantity, as in the croupous and diphtheritic forms; and *most* altered where, as in the catarrhal forms, the inflammatory phenomena are but a slight alteration of the ordinary secreting process. We believe that the membrane, in its healthy state, possesses a power of selecting from the blood plasma a new product—mucus; that in disease the nature of this product is changed, and assimilated more and more to the plasma of the blood; in other words, that while the vessels acquire an increased power of pouring out the elements of the blood plasma, the power of the membrane to alter and select from these elements is diminished.]—*Monthly Journal and Retrospect of Medical Sciences*, Oct. 1848.

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20. *Pathological Anatomy of the Kidneys.*—The *Monthly Journal and Retrospect of the Med. Sciences, &c.*, for the present year, contains an interesting series of papers by Dr. W. T. GAIRDNER, on the pathological anatomy of the kidneys. The following conclusions derived from his observations, he regards as especially important in relation to the pathology of renal diseases:—

1. By far the greater part of the pathological lesions of the kidney arise from, or are connected with, the exudation of oleo-albuminous granules into the interior of the tubes and epithelial cells.

2. The oleo-albuminous exudation is probably often preceded, and certainly occasionally accompanied, by vascular congestion; but when the quantity of exu-